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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/674,606

09/30/2003

Frank Eliot Levine

AUS920030485US1

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06/23/2006

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EXAMINER

FIEGLE, RYAN PAUL

ART UNIT

PAPER NUMBER

2183

DATE MAILED: 06/23/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

<b>Office Action Summary</b>	<b>Application No.</b> 10/674,606	<b>Applicant(s)</b> LEVINE ET AL.	
	<b>Examiner</b> Ryan P. Fiegler	<b>Art Unit</b> 2183	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

#### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

#### Status

- 1) ☒ Responsive to communication(s) filed on 18 April 2006.
- 2a) ☒ This action is **FINAL**.                      2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

#### Disposition of Claims

- 4) ☒ Claim(s) 1-24 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-24 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

#### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

#### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All    b) ☐ Some \*    c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.

#### Attachment(s)

- |   |   |
|---|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)   | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)  | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152)             |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)<br>Paper No(s)/Mail Date <u>1/9/06, etc.</u> | 6) <input type="checkbox"/> Other: _____  |

## **DETAILED ACTION**

### ***Specification***

1. The amendments made to the specification and title are gratefully accepted.

### ***Claim Objections***

2. The amendments to claims 5, 12 and 19. The examiner appreciates the applicant taking the time to find the additional mistakes in claims 12 and 19.

### ***Claim Rejections - 35 USC § 101***

3. Though the term "type" is typically considered to create 112 issues, the examiner believes that in this instance not to be the case since "recordable-type" is specifically defined in the specification.

Further, the examiner agrees that the amendment fixes the statutory problem and the rejection is withdrawn.

### ***Claim Rejections - 35 USC § 103***

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

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2. Claims 1, 8, 15 and 22-24 are rejected under 35 U.S.C. 103(a) as being unpatentable over Smolders (US Patent 6,253,338) in view of Buser (USPGPub 2004/0030870).

3. As per claim 1:

Smolders teaches a method in a data processing system for monitoring the execution of a program, the method comprising:

associating instructions for calls and returns in the program with a set of indicators (column 4, lines 15-18; column 3, lines 29-33; column 5, lines 20-24; column 5, lines 39-43) (Smolders associates all branches with indicators, this includes calls and returns. The indicators are T, the process information and counters.); and

executing the program using a processor, wherein the set of indicators associated with the instructions causes the processor executing the instructions to generate data on calls and returns in the program (column 4, lines 18-21; column 4, lines 60-65).

Smolders does not teach his indicators being in a field associated with each instruction for holding a potential indicator, while Buser does (Buser: Abstract; Figure 1).

Buser states that debugging problems arise in shared memory systems because not all processors are able to honor a breakpoint because they are not aware of it.

Buser's method solves these deficiencies (Buser 0002, 0003).

Therefore, it would have been obvious to one of the ordinary skill in the pertinent art that Buser's indicator field would be advantageous when using Smolder's debugging method in a shared memory system.

4. As per claim 8:

Claim 8 recites the system for performing the method of claim 1. Smolders teaches a system for performing his method (Figure 2). Therefore, claim 8 is rejected for the same reasons as claim 1.

5. As per claim 15:

Claim 15 recites a computer program product in a computer readable medium for performing the method of claim 1. Smolders teaches a computer program product in a computer readable medium for performing his method (column 6, lines 15-25).). Therefore, claim 15 is rejected for the same reasons as claim 1.

6. As per claims 22-24:

Claims 1, 8 and 15 further comprising the respective indicators each include an element chosen from the group consisting of a flag, a tag field, a threshold, and a count field (column 4, lines 15-18; column 3, lines 29-33; column 5, lines 20-24; column 5, lines 39-43) (T is a flag; the counters are count fields).

7. Claims 2-7, 9-14 and 16-21 are rejected under 35 U.S.C. 103(a) as being unpatentable over Smolders (US Patent 6,253,338) in combination with Buser (USPGPub 2004/0030870) as applied to claims 1, 8 and 15 above, and in view of Subrahmanyam (US Patent 5,987,250).

8. Smolders teaches claims 1, 8 and 15 for the reasons listed above.

9. As per claim 2:

Smolders does not teach the following limitations which Subrahmanyam does:

responsive to identifying an instruction in an instruction cache for execution during execution of the program, determining whether an indicator from the set of indicators is associated with the instruction (Subrahmanyam: column 4, lines 9-17; column 4, lines 35-38) (A probe location is marked by a flag indicator which is associated with a location in the instruction code, the location being an instruction, which will inherently come from an instruction cache since Subrahmanyam contains an instruction cache (Subrahmanyam: column 3, lines 60-64).); and

generating an interrupt if the indicator is associated with the instruction, wherein the interrupt causes execution of a program to generate data on the calls and returns in the program (Subrahmanyam: column 4, lines 38-43; column 1, lines 12-17; column 4, lines 2-5) (Subrahmanyam states that various analysis tools are well known in the art which his method can be used for. One of these tools is analyzing calls and returns.).

Smolders explicitly inserts monitor code into the instruction stream (Smolders: column 4, lines 21-26). Subrahmanyam states that this is undesirable for several reasons (Subrahmanyam: column 1, lines 50-65). Subrahmanyam's system collects data throughout regular execution, accumulating the data. Then when a probe location is reached, analysis is done and the data is dumped into an external file. When applying Smolders is applied to Subrahmanyam, data would be collected on calls and returns as normal, but it would accumulated until a probe location is reached, rather than interrupting to a analysis tool within the same process after each branch. Doing this would allow Smolders to observe call and return behavior without, "affecting

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program behavior,” (Subrahmanyam: column 2, lines 1-3) and would avoid the pitfalls observed by Subrahmanyam (Subrahmanyam: column 1, lines 50-65).

Therefore, it would have been obvious to one of ordinary skill in the pertinent art at the time of the applicant’s invention that applying Subrahmanyam to Smolders would allow for studying program behavior without affecting the program behavior.

10. As per claim 3:

The method of claim 1, wherein execution of an instruction associated with an indicator in the set of indicators causes passing of control to a process that records calls and returns (Subrahmanyam: column 4, lines 38-43; column 1, lines 12-17; column 4, lines 2-5).

11. As per claim 4:

The method of claim 1, wherein execution of an instruction associated with an indicator in the set of indicators causes passing of control to a process that identifies a calling routine (Subrahmanyam: column 4, lines 38-49).

12. As per claim 5:

The method of claim 4 further comprising:  
associating instructions in the calling routing with the set of indicators (Smolders: column 4, lines 15-18; column 3, lines 29-33; column 5, lines 20-24; column 5, lines 39-43); and

executing the program using a processor, wherein the set of indicators associated with the instructions causes the processor executing the instructions in the calling routine to generate data on calls and returns in the calling routine

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(Subrahmanyam: column 4, lines 38-43) (Smolders: column 5, lines 20-24; column 5, lines 39-43).

13. As per claim 6:

The method of claim 1, wherein the set of indicators are located in a shadow memory (Subrahmanyam: column 4, lines 49-53) (Smolders: column 3, lines 29-33).

14. As per claim 7:

The method of claim 1 further comprising:  
identifying a called routine (Subrahmanyam: column 5, lines 38-51; Figures 4A-4C, 5).

15. As per claim 9-14:

Claims 9-14 recite the system for performing the method of claims 2-8. Smolders teaches a system for performing his method (Smolders: Figure 2). The same would apply when Subrahmanyam is applied to Smolders. Therefore, claims 9-14 are rejected for the same reasons as claims 2-8.

16. As per claims 16-21:

Claims 16-21 recite a computer program product in a computer readable medium for performing the method of claims 2-8. Smolders teaches a computer program product in a computer readable medium for performing his method (Smolders: column 6, lines 15-25).). The same would apply when Subrahmanyam is applied to Smolders. Therefore, claims 16-21 are rejected for the same reasons as claims 2-8.

***Response to Arguments***



17. Applicant's arguments with respect to claims 1-24 have been considered but are moot in view of the new ground(s) of rejection.

### ***Conclusion***

18. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than **SIX MONTHS** from the date of this final action.

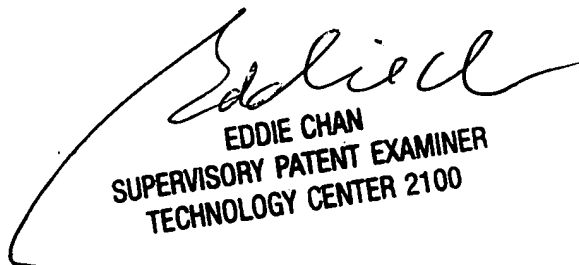
Any inquiry concerning this communication or earlier communications from the examiner should be directed to Ryan P. Fiegle whose telephone number is 571-272-5534. The examiner can normally be reached on M-F 8-4:30.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Eddie Chan can be reached on 571-272-4162. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

Ryan P Fiegle  
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Art Unit 2183



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